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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,872	12/11/2003	Matti Ryynanen	944-003.200	8080
4955 7590 03/20/2007 WARE FRESSOLA VAN DER SLUYS & ADOLPHSON, LLP BRADFORD GREEN, BUILDING 5 755 MAIN STREET, P O BOX 224 MONROE, CT 06468			EXAMINER SHERMAN, STEPHEN G	
			ART UNIT 2629	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/20/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/733,872

Applicant(s)

RYYNANEN, MATTI

Examiner

Stephen G. Sherman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-8 and 11-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-6,8,11-15,17 and 22-25 is/are rejected.
- 7) ☒ Claim(s) 7, 16 and 18-21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8 February 2007 has been entered. Claims 1,4-8 and 11-25 are pending.

Response to Arguments

2. Applicant's arguments with respect to claims 1,4-8 and 11-25 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1, 4-6, 8, 11-13-15 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Graham et al. (US 7,099,553) in view of Cok (US 7,042,444).

Regarding claim 1, Graham et al. disclose a method for determining a location of an object substantially touching a touch pad, the touch pad having a plurality of surrounding edges, said method comprising:

providing a light sheet comprising a plurality of light beams oriented to propagate in an air space over the touch pad such that the light sheet is partially blocked by the object when the object intrudes into the air space (Figure 5 and column 4, lines 8-35 explain that lamina 62 is provided in free space above the touch screen.),

wherein light intensity of the light sheet is spatially varying in such a manner that the intensity of the partially blocked light sheet is dependent upon the location of the touching object (Column 4, lines 8-35 explain that the lamina is interrupted when an input device is used to touch the screen, thus causing the light to be blocked, thus reducing the intensity. The examiner interprets that based on the structure shown in Figure 4 that since a single light source is used to reflect light off of the surfaces shown,

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that the intensity of light passing through these structures will inherently decrease thus providing for a reducing intensity further from the light source, which would mean that the intensity of the lamina would be dependent of where the user touched the screen.), and

wherein the light beams are provided by a first light providing structure disposed adjacent to a first surrounding edge (Figure 5, 10a) and a second light providing structure disposed adjacent to a second surrounding edge opposite to the first surrounding edge (Figure 5, 10b), and wherein each of the first and second light providing structures has a longitudinal axis and further comprises a light source for providing a source beam along the longitudinal axis, and a plurality of partially reflecting surfaces distributed along the longitudinal axis to partially reflect the source beam for providing the light beams in the light sheet such that light intensity of the light beams varies along the longitudinal axis (Figure 4 shows a light source 40 and facets 14 where it is explained in column 4, lines 2-5 that as the light travels through the member 10, light is reflected off of the facets 14 into the free space.);

disposing a first light detecting structure adjacent to the second light providing structure, further from the first light providing structure (Figure 5 shows Y receive array 72 provided adjacent to x input light source 10b.); and

disposing a second light detecting structure adjacent to the first light providing structure, further from the second providing structure (Figure 5 shows x receive array 70 provided adjacent to y input light source 10a.).

Graham et al. fail to teach wherein the first and second detecting structures are for measuring the light intensity of the light beams provided by the first light providing structure wherein the measured light intensity is reduced when the light sheet is partially blocked by the touching object, and calculating the location of the touching object based on the measured reduced intensity and the further measured reduced intensity.

Cok discloses a touch screen wherein the light detecting structures are for measuring the light intensity of the light beams provided by a light providing structure wherein the measured light intensity is reduced when the light sheet is partially blocked by a touching object, and calculating the location of the touching object based on the measured reduced intensity (Column 3, lines 31-39 explain that the emitter 62 shown in Figure 4 emits light which is detected by the sensors 64 in order to detect a touch, which is based upon the amount of light sensed by the sensors, i.e. the intensity received.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to make the x and y detectors taught by Graham et al. have the configuration of the sensors taught by Cok such that the touch location would be determined by the measured light intensity in the x and y directions in order to provided a high-reliability operation in which single-point failures can be overcome and convex shapes can be detected.

Regarding claim 4, Graham et al. and Cok disclose the method of claim 1.

Graham et al. also discloses wherein the light providing structure comprises a plurality of substantially parallel plates having a plurality of interfaces between adjacent parallel plates to provide said partially reflecting surfaces (Figures 3a-3c and column 3, lines 36-47 explain that there are a plurality of facets 14 with interfaces between them.).

Regarding claim 5, Graham et al. and Cok disclose the method of claim 1.

Graham et al. also disclose wherein the light source comprises a laser (Column 3, lines 51-53.).

Regarding claim 6, Graham et al. and Cok disclose the method of claim 1.

Graham et al. also disclose wherein the light beam is a substantially collimated light beam (Figure 4 shows collimating element 42 to make the light from source 40 a collimated light beam.).

Regarding claim 8, this claim is rejected under the same rationale as claim 1.

Regarding claim 11, this claim is rejected under the same rationale as claim 4.

Regarding claim 12, this claim is rejected under the same rationale as claim 5.

Regarding claim 13, this claim is rejected under the same rationale as claim 6.

Regarding claim 14, Graham et al. and Cok disclose the system of claim 8.

Graham et al. also disclose wherein the light source emits light in the visible wavelength region (The light source is a laser light source, where it is known that laser light sources can emit light in the visible wavelength region.).

Regarding claim 15, Graham et al. and Cok disclose the system of claim 8.

Cok also disclose wherein the light source emits light in the infrared wavelength region (Column 2, lines 36-38).

Regarding claim 22, Graham et al. and Cok disclose the system of claim 11.

Graham et al. also discloses wherein an air gap is provided between two adjacent parallel plates (Figure 4 shows that between facets 14 there is an air gap.).

Regarding claim 23, Graham et al. and Cok disclose the system of claim 11.

Graham et al. fails to explicitly teach wherein a substantially transparent bonding material is provided between two adjacent parallel plates, however, it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to join the facets of Graham et al. together in such a manner since the light is needed to be able to pass through the facets to be reflected for input detection, thus the material which holds the facets together would need to be transparent.

Regarding claim 24, Graham et al. and Cok disclose the system of claim 11.

Graham et al. fails to explicitly teach wherein the plurality of substantially parallel plates comprise plates made of materials of different refractive indices, however, it would have been an obvious design choice to "one of ordinary skill" in the art at the time the invention was made to make the facets taught by Graham et al. out of materials with different refractive indices in order to help control the amount of light provided for detection.

Regarding claim 25, Graham et al. and Cok disclose the system of claim 11.

Graham et al. fail to explicitly teach wherein at least a partial reflective coating is provided at each of the interfaces, however, it would have been an obvious design choice to "one of ordinary skill" in the art at the time the invention was made to make the facets taught by Graham et al. have a partially reflective coating to provide the reflection of light to create the lamina.

6. Claims 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Graham et al. (US 7,099,553) in view of Cok (US 7,042,444) and further in view of Graham et al. (US 6,351,260).

Regarding claim 17, Graham et al. (US 7,099,553) and Cok disclose the system of claim 8.

Graham et al. (US 7,099,553) and Cok fail to teach wherein the light detecting structure comprises:

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a light detector for providing the signal; and

a light pipe for receiving at least a part of the light sheet and conveying at least a part of the received light to the light detector.

Graham et al. (US 6,351,260) disclose a touch panel system comprising:

a light detector for providing the signal (Figure 4, processing receiver 408); and

a light pipe for receiving at least a part of a light sheet and conveying at least a part of the received light to the light detector (Figure 4, item 412 receives light sheet 418 and conveys the light to the receiver 408 as explained in column 6, lines 29-48.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the light detection system taught by Graham et al. to replace the light detecting structure taught by the combination of Graham et al. and Cok in order to provide an improved user input device that can provide high resolution at moderate cost.

Allowable Subject Matter

7. Claims 7, 16 and 18-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 7, the primary reason for indicating allowable subject matter is the inclusion of the limitations of "providing a further third light providing structure adjacent to the third surrounding edge and a fourth light providing structure for providing a further light sheet in the air space over the touch pad such that the further light sheet is partially blocked by the object when the object intrudes into the air space substantially touches the touch pad, wherein light intensity of the further light sheet is spatially varying in such a manner that the blocked intensity of the partially blocked further light sheet is dependent upon the location of the object" and also "disposing a third light detecting structure adjacent to the fourth light providing structure, further from the third light providing structure, for measuring light intensity of part of the further light sheet provided by the third light providing structure; disposing a fourth light detecting structure adjacent to the third light providing structure, further from the fourth providing structure, for measuring the light intensity of part of the further light sheet provided by the fourth light providing structure, wherein the measured light intensity of the further light sheet is reduced by the blocked intensity when the further light sheet is partially blocked by the touching object; and calculating the location of the touching object also based on the measured light intensity of the further light sheet provided by the third and fourth light providing structures," which is not found singularly or in combination within the prior art.

Regarding claim 16, the reasons for indicating allowable subject matter are the same as the reasons for claim 7.

Regarding claim 18, the primary reason for indicating allowable subject matter is the inclusion of the limitation "wherein the light pipe has a first end, an opposing second end, a longitudinal axis connecting the first end and the second end, and a pipe surface along the longitudinal axis, wherein the light detector is disposed at the first end, and wherein the pipe surface has diffractive or prismatic surfaces to convey said at least a part of the received light to the first end," which is not found singularly or in combination within the prior art.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Graham (US 2004/0201579) discloses a touch screen that comprises a continuous light sheet in the free space adjacent to a touch screen which is capable of detecting data entries to the input device by determining the location of interrupts in the light caused when data is entered to the input device.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen G. Sherman whose telephone number is (571) 272-2941. The examiner can normally be reached on M-F, 8:00 a.m. - 4:30 p.m..

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SS

12 March 2007

AMR A. AWAD
SUPERVISORY PATENT EXAMINER

A handwritten signature in black ink, appearing to read "Amr A. Awad", with a large, sweeping flourish at the end.